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**BEFORE THE SUBCOMMITTEE ON CONSERVATION, CREDIT, RURAL DEVELOPMENT AND RESEARCH AND THE SUBCOMMITTEE ON GENERAL FARM COMMODITIES AND RISK MANAGEMENT**

**April 27, 2005**

Mr. Chairman and Members of both Subcommittees, thank you for the opportunity to be at today's hearing on issues on soybean rust and its implications for U.S. agriculture. Soybean rust (SBR) is caused by two species, Asian (Old World) rust (*Phakopsora pachyrhizi*) and South American (New World) rust (*Phakopsora meibomiae*). My testimony will focus on Asian soybean rust because it is more destructive than the New World rust.

**Status**

Before I get into my testimony, I would like to spend a few minutes providing you with an update on what USDA is doing to inform the public on this issue and where we stand with respect to Asian soybean rust in the United States.

As many of you are aware, on March 15, 2005, Secretary Johanns unveiled USDA's interactive soybean rust web site as part of a national soybean rust plant disease surveillance and monitoring network. The purpose of this website is to help ensure farmers and producers have easy access to the best information and guidance on soybean rust.

The web site provides information on the extent and severity of soybean rust outbreaks in the United States, Caribbean basin and Central America; will give users up-to-date forecasts on where soybean rust is likely to appear in the United States; reports where the disease exists by

county; and provides links to the National Plant Diagnostic Networks laboratories and other web sites to give producers effective disease management options.

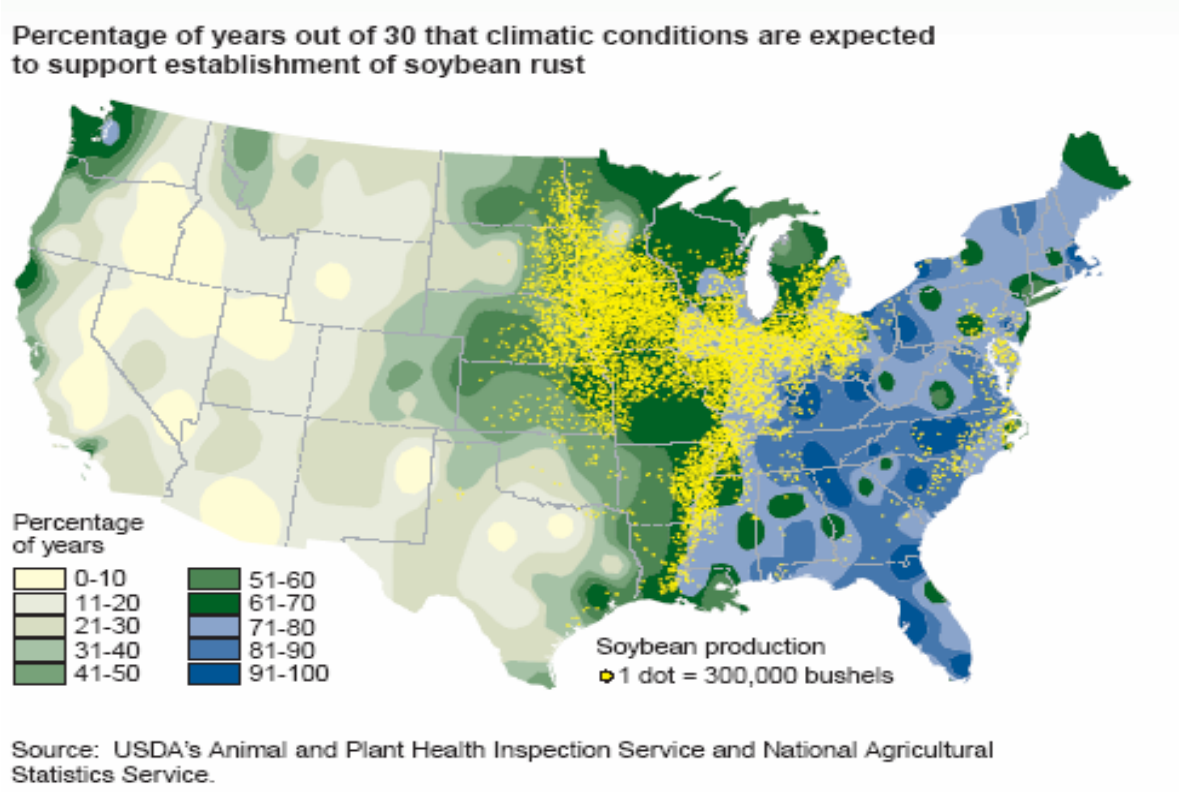
USDA agencies, including the Animal and Plant Health Inspection Service; the Cooperative State Research, Education and Extension Service; the Risk Management Agency; and the Agricultural Research Service, partnered with soybean industry organizations, state departments of agriculture and many in the research and scientific communities to launch this comprehensive web site. This effort is part of the strategic plan that USDA implemented in 2002 in anticipation of a potential soybean rust find in the U.S., which established priorities of protection, detection, response and recovery.

With respect to the spread of soybean rust in the United States, as of April 19, 2005, the first cases of soybean rust in 2005 has been confirmed in Pasco, Marnando and Marion Counties, in Florida. In all three counties, the rust was confirmed on kudzu and no cases of rust have been found on soybeans. National activity has increased in terms of surveillance of rust on other crops as well as the planned/planted sentinel plots. Most states in the southern U.S. have planted at least a portion of their sentinel plots and some plots have been planted as far north as Illinois. Recent spore transport simulations indicate a northerly flow from Florida with concentrations higher in northern Florida and parts of Georgia.

However, no national advisory is active at this point in time because it is early in the soybean growing season, and observations indicate that soybean rust is confined to isolated areas of over-wintering kudzu in Florida. Disease forecast models show little or no spore deposition and available host is limited to restricted plantings and non-soybean hosts in southern areas.

Model predictions do not indicate that scouting is required in commercial soybean fields at the present time.

The figure below provides some guidance as to which areas of the United States may be most suitable to support the establishment of soybean rust. As described in the figure, climatic conditions in the eastern part of the United States are expected to support soybean rust in 70 percent of the years while climate conditions in the central United States are expected to support soybean rust in 50-70 percent of the years. The reason for concern about soybean rust in the United States is that most of the soybeans produced (represented by the yellow dots in the figure) in the United States are grown in those areas where climate conditions are expected to support soybean rust in greater than 50 percent of the years.




**History of Soybean Rust**

Asian soybean rust is a fungus that is spread primarily by windborne spores that can be transported over long distances. Seed-borne transmission has not been documented with normal soybean production practices; furthermore, soybean rust could not be produced in controlled experiments with spore-contaminated soybean seed. Clouds of spores are released if infected plants are disturbed by wind or by individuals walking through rust-infested areas.

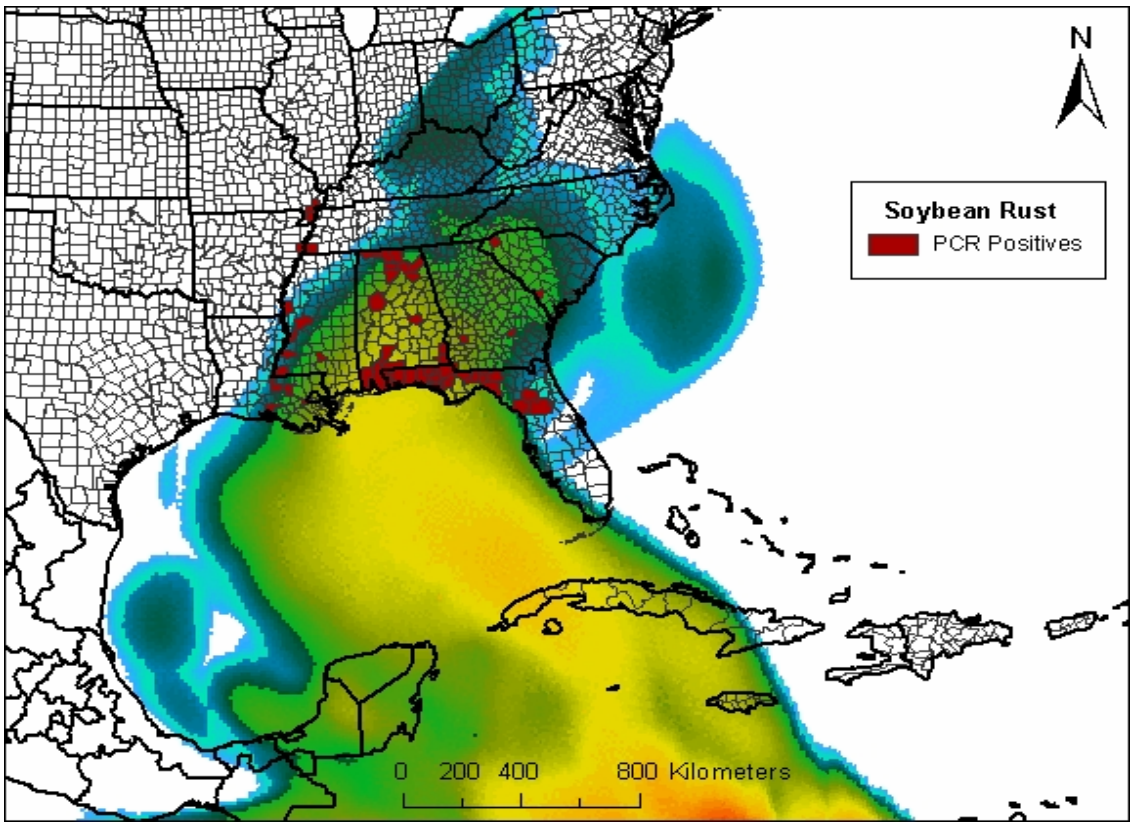
Soybean rust is very mobile and has been reported in numerous countries throughout the world including Australia, China, India Taiwan, Philippines and Thailand in the Eastern Hemisphere; Brazil, Argentina, Paraguay in the Western Hemisphere; and in Zimbabwe, Nigeria and South Africa on the African continent. Researchers believe it was spread by wind currents from Asia to Africa, then to South America.

Soybean rust was first reported in Japan in 1902. By 1934 it had been found in other Asian countries and Australia and by 1951 it was reported in India. While there have been early reports of soybean rust in equatorial Africa, the first confirmed report on the African continent was in 1996 from Kenya, Rwanda, and Uganda. In 1998, spores were blown 1,350 miles from Uganda to Zimbabwe. Since 1998, soybean rust has been reported in Zambia, Mozambique in 2000, and South Africa in 2001.

The first detection of soybean rust in the Western Hemisphere occurred in 2001 in Paraguay. By 2002, soybean rust was widespread throughout Paraguay and in limited areas of Paraguay's border with Brazil and in northern Argentina. Between 2001 and 2003, the disease spread more than 1,500 miles, from Paraguay to near the equator, infecting as much as 90 percent of Brazil's soybean acres on the way.

In November 2004, USDA's Animal and Plant Health Inspection Service confirmed the first instance of Asian soybean rust found in the contiguous United States on soybean leaf samples taken from two fields in a production farm associated with a Louisiana State University research farm in Baton Rouge.[1] Model predictions indicated that soybean rust spores had been widely dispersed throughout the southeastern United States weeks earlier, and subsequent field and laboratory observations confirmed this distribution. The figure below depicts the predicted incursion of soybean rust deposition in the United States as of January 12, 2005, with counties that have experienced actual positive soybean rust spores detections since November 2004 depicted in red. Higher predicted concentrations of spores during the active hurricane season of 2004 are represented by the lighter colors on the map (orange and yellow) while lower predicted concentrations are represented by the darker colors (blues).

[1] Soybean rust was first found in the United States in Hawaii in 1994 on cultivated soybeans on the islands of Oahu, Kakaha, Kauai, and Hilo.




Source: D. Borchert, G. Fowler, and R. Magarey (USDA-APHIS-PPQ-CPHST-PERAL).

While the exact source of infection in the United States may never be known, a probable explanation is the spread of the disease from South America to the United States during the active hurricane season in 2004.

**Treating Soybean Rust**

Fungicides provide protection and delay soybean rust epidemics as long as they remain in sufficient concentration in or on the soybean leaf. For fungicides to be optimally effective against soybean rust, they must be applied at the proper time. Experience from Africa and Brazil indicates that early treatment is critical for optimum fungicide performance with soybean rust.

Fungicides must be applied in the early stages of a soybean rust epidemic (i.e., pre-infection to less than 5 percent incidence on leaves in the lower canopy) to be highly effective. Disease control may be severely compromised if applications are made after soybean rust is firmly established (greater than 10 percent incidence in the mid-canopy). Reports from Brazil indicate that when 20-30 percent of the soybean leaves in the mid canopy are affected by soybean rust, fungicides are no longer able to protect plants sufficiently from additional infections, or yield reduction is already so great that a fungicide application cannot recover treatment cost. The U.S. Environmental Protection Agency (EPA) has approved several fungicides for soybean growers. A list of pesticides that were available as of March 31, 2005 can be found at the following web site: http://www.epa.gov/oppfead1/cb/csb_page/updates/soybean_rust.htm. Updates will follow if additional new products clear the pesticide registration process.

**Economic Impacts**

Soybean rust has devastated soybean crops in many parts of the world, with reported yield losses as high as 80 percent in some afflicted areas of Africa and South America. In Australian test plots where no fungicides were applied, yield losses reached 60-70 percent. In 2003, Brazilian producers lost $1.3 billion to soybean rust, a figure representing lost yield and the cost of fungicides applied to combat further losses.

*Effects on Producers*

Determining the effects of soybean rust on individual producers is difficult because of the uncertainty about the disease and the lack of experience in treating the disease in the United

States. Even the costs of fungicides used to treat soybean rust are highly variable. For example, a study by researchers at the Louisiana State University found that fungicide costs ranged from $6.53-$20.00 per acre depending on the fungicide and the use rate. Those researchers concluded that the estimated cost associated with 2 applications ranged from $19-$50 per acre with an average of $30 per acre. Researchers at the USDA's Economic Research Service (ERS) also noted the wide range fungicide costs associated with treating soybean rust and assumed an average annual treatment cost of $25 per acre was reasonable.

The ability of producers to absorb higher fungicide costs will be determined by soybean yields and prices; with farmers who can produce higher yields better able to absorb the costs compared to farmers with lower yields. In a breakeven analysis conducted by researchers at the Louisiana State University, farmers who could not produce soybeans with yields greater than 30 bushels per acre found it difficult to produce soybeans profitably at current prices. Similarly, researchers at ERS found that simulation results were far more sensitive to changes in yields than fungicide costs. Because soybean yields are higher in the Midwest compared to Southern States, one would expect farmers in Southern States to be more adversely affected by soybean rust than farmers in the Midwest.

*Effects on Exports*

Aside from the direct production impacts, we do not expect soybean rust will have a detrimental impact on U.S. exports of soybeans or soybean products. Because soybean rust is spread primarily by windborne spores and no seed-born transmission of the disease has been documented there is little concern that the disease would be spread through exports. Brazil's

experience since soybean rust was discovered there suggests that exports would be largely unaffected.

*Aggregate Effect on Soybean Market*

In an effort to assess the possible economic impacts of soybean rust in the United States, in April 2004, USDA's Economic Research Service (ERS) published a report on the economic implications of soybean rust in the United States. The ERS study concluded that during the first year of soybean rust introduction in the United States, the expected value of the economic losses ranged from $640 million to $1.3 billion, depending on the geographic extent and severity of initial entry. As farmers adjusted to the presence of soybean rust, annual economic losses ranged from $240 million to $2 billion, again, depending on the severity and extent of subsequent outbreaks.

The wide range of estimates reflects the uncertainty regarding the biological and economic impacts of soybean rust on domestic soybean producers. The relatively smaller economic losses ($240 million) are based on the assumptions that the spread of soybean rust in the United States is limited to the Southeast (Alabama, Florida, Georgia, and South Carolina), Delta (Arkansas, Louisiana, and Mississippi), and Appalachia (Kentucky, North Carolina, Tennessee, Virginia, and West Virginia) regions and fungicides used to treat soybean rust increase yields by 0.9 percent. The relatively larger economic losses ($2 billion) are based on the assumptions that the spread of soybean rust extends to all soybean regions in the United States and yields fall by 9.5 percent even with the use of fungicides to treat soybean rust.

**Farmers Responses**

Each year USDA's National Agricultural Statistics Service (NASS) conducts the March Agricultural Survey in every producing State. Randomly selected farmers across the United States were asked what they intend to plant during the upcoming growing season for a number of crops, including soybeans. For the Nation as a whole, soybean producers intend to plant 73.9 million acres in soybeans in 2005, down about 2 percent or 1.3 million acres from last year's record high levels. This decline was less than the 2 million acre decline many individuals expected and reflects changes in both economic conditions as well as the threat of soybean rust. For example, almost 40 percent of the decline was caused by a 500,000 acres decline in expected soybean plantings in North Dakota; a state which, compared to other parts of the country, has a relative low soybean rust suitability index. In other states, the threat of soybean rust may have played a more important role in farmers expected plantings. In Louisiana, where soybean rust was first discovered in the contiguous United States, expected soybean plantings fell by 250,000 acres in 2005. The largest percentage declines from 2004 levels was in States where soybean rust had been detected in 2004: Florida (down 42%), Louisiana (down 23%), Alabama (down 24%), Georgia (down 21 percent) and South Carolina (down 19%).

Due to the discovery of soybean rust, NASS included questions on Asian soybean rust in the March Agricultural Survey to measure farmer awareness of soybean rust and how its discovery affected planting decisions for the 2005 crop. Farmers in the 31 soybean-producing states were also asked:

- Have you seen, read, or heard any information about Asian soybean rust? If a farmer responded "yes," they were then asked:

• Was Asian soybean rust a decision making factor in your soybean planting intentions for 2005? If a farmer responded "yes," they were asked two additional questions:

• Did Asian soybean rust result in an increase, decrease, or no change in your soybean planting intentions?

• By how many acres did your soybean intentions change due to the Asian soybean rust?

Results of the March Agricultural Survey, published in the USDA's Prospective Plantings report, revealed that 89 percent of soybean producers in the 31 soybean-producing States were aware of soybean rust and have seen, read, or heard information about the disease.

While most soybean producers were aware of soybean rust, only 11 percent reported that it was a factor in their planting intentions. Of those 11 percent, 49 percent decreased their intended soybean acreage due to the threat of soybean rust, while 9 percent increased their intentions. The remaining 42 percent of soybean producers who reported that soybean rust factored into their planting decisions had not changed their intentions as of March 1, 2005.

As expected, the greatest percent of soybean producers that reported soybean rust was a decision making factor in their soybean planting intentions for 2005 were located in regions of the country that are likely to be the most affected. Compared to 11 percent nationally, 29 percent of soybean producers in the Southeast region (Alabama, Florida, Georgia, and South Carolina) and 19 percent of soybean producers in the Delta States region (Arkansas, Louisiana, and Mississippi) reported that soybean rust was a decision making factor in their soybean planting intentions. Of those soybean producers in the Southeast and Delta States regions that reported soybean rust was a decision making factor, 63 percent decreased their soybean planting

intentions. The results from the 2005 March Survey on prospective planting for soybeans and responses to the questions on soybean rust are included at the end of my testimony.

**Crop Insurance**

Soybean rust is an insured peril under the Federal crop insurance program. However, as with all crop insurance policies and plans of insurance, farmers must use good farming practices to ensure that in the event of any naturally occurring disease outbreak, such as soybean rust, they will be eligible for an indemnity based on the full amount of loss. If good farming practices are not followed, production attributed to the failure to follow good farming practices is assessed, resulting in a reduction in the indemnity due the insured.

Therefore, USDA's Risk Management Agency (RMA) encourages insured producers concerned about the impact of soybean rust to use good farming practices by seeking and following recommendations of agricultural experts, such as extension agents and certified crop consultants, to control soybean rust. Appropriate treatment may vary from timing of application (pre- or post-discovery of the disease), frequency, and choice of chemical or other determining factors. Insured producers should follow developments as to the identification and spread of soybean rust disease and stay informed and updated concerning appropriate treatments that may apply to their situation. RMA also recommends that insured producers document the date of discovery of the disease, any recommendations received from agricultural experts, and actions taken regarding the application of appropriate control measures.

It is the approved insurance providers' responsibility to verify that losses are unavoidable due to naturally occurring events. That includes verifying producers followed good farming

practices or that chemicals or application equipment were not available or natural events (for example, excessive moisture) precluded access to the crop to timely apply the recommended treatments.

**Conclusions**

In conclusion, let me reiterate that USDA will continue to partner with soybean industry organizations, state departments of agriculture, and many in the research and scientific communities so that producers can find the latest information on the spread of soybean rust. This information can be accessed from the USDA website at http://www.usda.gov/soybeanrust. In addition, information about soybean rust control measures may be obtained from local chemical dealers, crop consultants, and plant pathologists in agriculture departments of State governments, and universities who are familiar with the risks of exposure to this disease.

Again, thank you for allowing me to testify before this subcommittee. I am happy to answer any questions you might have.